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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,515	07/27/2006	Raymond Clarke	14752-1US	2212

93049 7590 09/19/2011

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EXAMINER	
THAKUR, VIREN A	

ART UNIT	PAPER NUMBER
1782	

NOTIFICATION DATE	DELIVERY MODE
09/19/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/597,515	CLARKE ET AL.	
	Examiner	Art Unit	
	VIREN THAKUR	1782	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *17,18,22-28,30-36 and 38-60* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *17,18,22-28,30-36 and 38-60* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *29 June 2011* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/28/11*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The objection to the drawings has been withdrawn in view of the replacement drawings and corresponding amendment to the specification, to correct the numbering of elements in the drawings.

Response to Amendment

2. As a result of the amendment to the claims, the rejection of claim 34 under 35 U.S.C. 112, second paragraph has been withdrawn.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 40, 50 and 55-60 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a

way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 40, 50 and 55 recite the limitation “an auxiliary closed chamber” that is “different from the closed chamber of the module” (claim 40,50) or “separate from the module” (claim 55), where the “auxiliary closed chamber” comprises “an auxiliary inlet for gas, and an auxiliary outlet for gas.” The inlets for gas have only been disclosed with respect to the modules (see page 19, line 20). Figures 4 and 5 of Applicants’ drawings disclose inlets to three “separate” chambers 2a, 2b and 2c, but do not show separate outlets for each of these chambers. These chambers are all part of the same module and thus do not disclose an “auxiliary chamber” separate from the module or “different from the module.” That is, these auxiliary chambers appear to be part of the module. Also, figure 3 of Applicants’ drawings only discloses a single outlet pipe and does not disclose each chamber comprising an outlet pipe. Page 16, lines 12-13 of the specification, which applicants rely on for support of the auxiliary containers, discloses the use of multiple atmosphere control members but does not disclose two different chambers separate or different from each other, each having their own inlet and outlet for gas. Page 9, lines 24-28 of Applicants’ specification discloses two or more walls having ACM’s but this portion discloses "a module” having two or more walls. This portion does not disclose “an auxiliary chamber”, “separate" or “different from” the module and also having its own inlet and outlet for gas to enter and exit the chamber. The claims and the specification are also not clear as to whether “auxiliary closed chamber” also refers to a second “module.” Also, page 14, lines 15-25 of Applicants'

specification discloses that there can be two or more chambers each containing an ACM but does not disclose that each of these different chambers has both an inlet and an outlet for gas. This portion of Applicants' specification also does not disclose whether the chambers are "separate from the module" or "different from the module," as recited in the claim. As discussed above, the limitation that each of the (auxiliary/separate) chambers has an inlet is supported by the specification but each also including an outlet does not appear to be supported by applicants' specification and thus is new matter. Also, the "auxiliary chamber" being "different from" or "separate from" the module also does not appear to be supported by the specification.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 17, 22, 30-32, 34, 35, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcellin in view of White (US 6256905).

Regarding claim 17, Marcellin teaches a storage container (see figure 10B, on page 231) which has been designed to contain a biological material such as respiring foodstuff and is sealed around the foodstuffs. Marcellin also teaches a module which is within a container (see figure 10B - “Exchanger diffuser”) and comprises an inlet and outlet for gas (as shown by the arrows for the gas entering the diffuser and discharging fromt eh diffuser) and an atmosphere control member having a first and second surface. In this case, the first and second surfaces are the atmosphere control members are the surface which contacts the second atmosphere (inside the diffuser) and the first surface which diffuses the gas to the first atmosphere (inside of the container itself). Regarding the particular surface area of the atmosphere control member, it is noted that Marcellin teaches the diffusion members having a surface area of 3 square meters (see section labeled “Description of the Batteries and Types of Industrial Installations.”

Claim 17 differs from Marcellin in specifically reciting that the container is a shipping container which is capable of being loaded onto and transported by a ship or truck, has a capacity of at least 40 cubic meters.

It is noted however, that White teaches regulating gas within a shipping container, where the shipping container can comprise respiring foodstuffs (see figure 1a, 1b and 16 and column 9, lines 12-14) and where a gas regulating device has also

been placed into the container (see column 9, lines 28-57 and also see column 15, line 62 to column 16, line 44). White is similar to Marcellin since White also employs "modules" for the purpose of controlling the atmosphere within a container for preserving foodstuffs such as respiring foodstuffs (fruit or vegetables). White also teaches maintaining a particular gas atmosphere within a shipping container or a storage facility (see column 9, lines 7-8). White also teaches that there is an advantage to employing a modified atmosphere to a shipping container, so that the respiring foodstuffs can be maintained in a preserved state while also being transported. Therefore, to modify the container of Marcellin and employ a shipping container which is capable of being loaded onto a truck for transport would thus have been obvious to one having ordinary skill in the art, for the purpose of also being able to control the atmosphere during the transportation of the product. Additionally, to thus make the "container" portable is not sufficient by itself to patentably distinguish over an otherwise known device unless there are new or unexpected results (see MPEP 2144.01(V)(A).

Regarding the particular capacity of the shipping container being at least 40 cubic meters, it is noted that the particular size of the container would nonetheless have been obvious to one having ordinary skill in the art, based on the particular amount of respiring foodstuffs that were desired to be held within the preserving modified atmosphere. In any case, White teaches conventional shipping containers that are 20 feet long by 8 feet wide by 9 feet high (1440 cubic feet = ~40.77 cubic meters), (see column 2, lines 42-45) that have been employed for maintaining modified atmospheres. Therefore, to modify Marcellin and employ a container having a capacity of at least 40

cubic meters, as taught by White would thus have been obvious to one having ordinary skill in the art for the purpose of being able to employ the controlled atmosphere as taught by Marcellin for transporting bulk quantities of respiring foodstuffs.

Claim 17 also recites that the container was constructed separately from the shipping container. It is noted that to make the module separable would not have provided a patentable distinction over the art because to make a product separable could be considered desirable for the purpose of being able to more easily service the module if repairs were desired, for instance (See MPEP 2144.04(V)(C). Also, making the module removable would have been advantageous for being able to interchange the module, due to repairs or use with other containers. Also, such a modification would have been advantageous for the purpose of being able to interchange different modules that would allow for different degrees of gas permeation into the container, based on the particular type of respiring foodstuff to be stored and the requisite modified atmosphere to maintain the freshness of the particular foodstuff. In any case, it is noted that White also teaches that the gas regulating device is removable, since it is loaded onto the container (see column 9, lines 42-57). Clearly, making such a gas regulating device removable would have provided the advantage that it could be employed for shipping containers of various types, such as refrigerated containers, seagoing cargo containers, railroad freight cars, to name a few (see column 9, lines 32-34). Thus to modify the combination of Marcellin and White, and make the module of Marcellin removable would have been obvious to one having ordinary skill in the art for the purpose of being able to more easily repair the module as well as interchange it with different containers.

Regarding claim 22, Marcellin teaches employing conduits for the inlet to and the outlet from the module (see figure 10B wit the inlet and outlet arrows). With regard to claim 22, Marcellin is silent as to the conduits connecting to the inlet and outlet being flexible conduits. It is noted however, that White clearly teaches employing hosing (which is thus flexible) as the connecting conduits (see column 14, lines 19-21 and figures 7a, 7b and column 16, lines 25-33). Regarding the use of hosing, it is noted that clearly hosing provides for added maneuverability of the conduits since they would flex since flexible conduits have been known to be easier to bend and manipulate than non-flexible conduits. In view of White who also teaches that the gas regulating device is removable from the container, to thus modify Marcellin and employ flexible inlet and outlet conduits would further have been advantageous for the purpose of providing the added maneuverability to the conduits for making it easier to route the conduits to the module and do and from the container.

Regarding claim 34, the combination of Marcellin and White teaches employing a container with a 40 cubic meter capacity that can be loaded onto a ship or truck. It is noted that whether one of ordinary skill first loaded the respiring biological material into the container, and then connected to module to the container and subsequently sealed the container or whether one of ordinary skill first set up the module with the conduits and then placed the respiring biological material into the container would have been a rearrangement of steps that is not seen to provide a patentable distinction over the prior art since the above steps are not seen to have modified the operation of the module and the respective conduits for controlling the atmosphere within the container.

Nevertheless, White clearly teaches on column 9, lines 28-57 that the food can first be loaded and then the gas regulating device can be loaded last. Alternatively White also teaches that the gas regulating device can be loaded first. Therefore, whether one of ordinary skill first connected the gas regulating device of Marcellin with the container or performed this as a last step prior to sealing the container would have been an obvious rearrangement of steps that would have been within the routine skill of one having ordinary skill in the art.

Regarding claim 35, White further teaches employing flexible first and second conduits, as discussed above with respect to claim 22.

Regarding claim 45, it is noted that the combination of Marcellin and White clearly teach providing a portable, separate gas regulating device has been advantageous for the purpose of being able to control the atmosphere within a container during transport, and so that the gas regulating device of Marcellin can be interchanged across containers and for servicing purposes. Thus, the limitations of the shipping container, the respiring biological material and the module, as recited in claim 45 have already been discussed above with respect to claims 17 and 34. Regarding the steps of unsealing the container, then removing the module and then unloading the respiring biological material, it is noted that since White already teaches that the gas regulating device can be loaded last (prior to sealing) that the logical steps for unloading the respiring biological material would have been to unseal the container, remove the gas regulating module and then remove the respiring biological material.

Regarding claims 30 and 31, it is noted that since Marcellin already teaches a flow of gas over the atmosphere control members in the module, that the particular flow rate of the second atmosphere through the chamber would have been a function of the particular atmosphere desired within the container. The flow rate of the second atmosphere of Marcellin would have been know to be a result effective variable, since the diffusion of select components into the first atmosphere would also have been a function of the rate of diffusion through the atmosphere control members and also a function of the particular respiring foodstuff within the container and the size of the container and also the requisite degree of diffusion of the gases required for maintaining a particular gas atmosphere. Therefore, to thus experiment with a particular flow rate of the second atmosphere taught by Marcellin and to experiment with a flow rate per unit area of the atmosphere control member of the second atmosphere of Marcellin would thus have been an obvious result effective variable, routinely determined through experimentation.

Regarding claim 32, which recites that the chamber comprises atmosphere control members on a major face and an inlet and outlet for incoming and outgoing gases on a first and second minor opposite faces, respectively, it is noted that Marcellin teaches that the atmosphere control members are on a major face, as shown in figure 10B in cross-section. The “top” and “bottom” as shown in figure 10B can be considered minor faces on which are inlet and outlets for incoming and outgoing gases, respectively. Marcellin teaches vertical, parallel alignment but does not specifically state that the shape of the chamber is rectangular parallelepiped or cylindrical,

respectively. From figure 10B, by way of the cross-section, it would appear that the module would indeed employ a rectangular shape. It is noted however, that since Marcellin already teaches a chamber with opposite facing inlet and outlets for gases and another face with atmosphere control members, the particular shape of the chamber is not seen to have provided a patentable distinction over the combination.

8. Claims 18, 44 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcellin in view of White, as applied to claims 17, 34, 45 above, and in further view of Liston (US 5801317).

Regarding claims 18, 44 and 46, Marcellin teaches the use of a blower, which thus would have created a degree of pressure for supplying gas to the second surface, and also would control the rate at which the gas can be supplied to the second surface (i.e. meter the gas). (see figure 10B, item labeled “Blower”).

Claims 18, 44 and 46 differ from the combination of Marcellin and White in specifically reciting that the system comprises one or more sensors which measure the concentration of the inner atmosphere and the metering rate of the second atmosphere being supplied in response to input from the one or more sensors.

It is noted however, that Liston teaches employing sensors (figure 2, item 58 and 54) for sensing the concentration within the container, and subsequently using this measurement to control the input of outside air into a gas separation device (24) which subsequently injects the requisite gas into the container via conduit (38) for thus controlling the gas concentration inside the container (see column 12, lines 6 to column

13, line 48). Liston is thus similar to Marcellin since Liston also controls the atmosphere within a container used to maintain the freshness of respiring foodstuffs. In view of Liston, it would have been obvious to one having ordinary skill in the art that there is clearly an advantage to employing sensors that monitor the gas concentration within the container, so that the atmosphere within the container is maintained at the requisite concentration. This would further have been desirable since respiring foodstuffs clearly would have consumed particular gases present within the container, for the purpose of retaining freshness. Therefore, to modify the Marcellin/White combination and to also employ sensors that monitor the atmosphere within the container and to employ pressure generating and metering devices (i.e. such as blowers and valves) which actuate based on the data measured by the sensors would thus have been obvious to one having ordinary skill in the art, for the purpose of being able to closely monitor the concentration of the gases within the container.

9. Claims 23, 33, 36, 38, 47, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Marcellin and White, as applied to claims 17, 34, 45 above, and in further view of Clarke (US 6376032).

Regarding claims 23, 38 and 48, Marcellin teaches employing an atmosphere control member employing multiple films of silicone elastmoer coated fabric that is arranged in parallel within the module (see page 230, “silicone elastomer fabric”; “the elements are arranged vertically and in parallel between two collectors in an aluminum frame”).

Claims 23, 38 and 48 differ in reciting that the atmosphere control member comprises a microporous film having a coating of a side chain crystalline polymer therein and has an oxygen P_{10} ratio over at least one 10° range between -5 and 15°C of at least 1.3.

It is noted however, that Clarke et al. ‘032 teaches a microporous film having a coating of a side chain crystalline polymer therein, and has an oxygen P_{10} ratio over at least one 10° range between -5 and 15°C of at least 1.3 (see the abstract - “Preferred coating polymers are side chain crystalline polymers.”; column 1, lines 62-64 and column 3, lines 7-12). Clarke teaches that employing such permeable films for controlling the atmosphere within a container, and where the permeable film provides the only pathways for oxygen and carbon dioxide to enter and leave the container (see column 4, lines 8-19). Clarke et al. ‘032 further teaches that the container can comprise multiple permeable control sections for oxygen and carbon dioxide (column 4, lines 14-19). Marcellin also teaches employing multiple coated films (see page 230 - “silicone elastmoer coated fabric" “arranged vertically and in parallel”) for achieving the requisite diffusion of oxygen and carbon dioxide into the “first atmosphere” of the container. It is further noted that the particular permeability across multiple atmosphere control members would also have been a function of the size of the container and the quantity and type of respiring material to be stored in the container. Therefore, since Clarke ‘032 already teaches that employing a coated film as recited in claim 23, for the same purpose as Marcellin teaches employing coated porous films - to control the gas atmosphere to which the respiring material has been exposed - it would have been an

obvious result effective variable, routinely determined to experimentation to modify the coated polymeric films of Marcellin and to employ a polymeric coated film, as taught by Clarke '032 within the diffusion module of Marcellin, for the purpose of achieving the requisite gas concentration within the container.

Regarding claim 33, Clarke '032 teaches employing a single polymeric coating on the microporous film (column 6, line 45). Therefore, it would have been obvious to one having ordinary skill in the art to employ a single coating since Clarke '032 teaches that a single coating has been adequate to achieve the requisite permeability of the film.

Regarding claims 36, 47, Clarke '032 also teaches that the ACM has an R ratio of at least 3(see column 6, line 67 to column 7, line 2). Clarke '032 also teaches that the particular coating and permeability properties of the film have been well known to be routinely determinable through experimentation based on the requisite properties desired of the respiring foodstuff (see column 3, lines 13-18). Thus, Clarke '032 teaches that it has been conventional in the art to employ multiple ACM's (column 4, lines 14-19) and that it has been conventional to employ coated microporous films having an R ratio of greater than 3. It is noted that Marcellin already teaches multiple ACM's and teaches that the particular permeability required in the container has been well recognized to be a function of the particular respiring foodstuff (see at lest, page 229 which discloses the various oxygen and carbon dioxide concentrations of different respiring foodstuffs). Therefore, to modify Marcellin and to employ a selective ACM such as that taught by Clarke '032, which is a polymer coated microporous film having an R ratio of at least 3, would thus have been an obvious result effective variable,

routinely determined through experimentation for achieving the requisite gas diffusion through the chambered diffusion module of Marcellin. It is noted that the claims do not recite any particular type of respiring biological material or the quantity of the respiring biological material. It is noted that the type of atmosphere control member and the permeability required of the atmosphere control members would also have been a function of the type and quantity of the respiring biological material in the container, since the degree of respiration would also have affected the concentration and composition of the gas atmosphere within the container.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Marcellin and White, as applied to claim 17, and in further view of Clarke (US 20020127305), and DeMoor(US 6013293).

Regarding claim 24, Marcellin teaches placing respiring materials in the containers and White teaches packaged products (see figure 1a, item 10 and 20) within an outer container (figure 1a, items 16 and 12). It is noted that the boxes of White could be construed as atmosphere control members since they would have restricted the particular exposure of the respiring food within the box to the particular inlet of gas. Nevertheless, claim 24 differs in reciting that the respiring biological material is paced in a plurality of ACM containing sealed inner containers.

It is noted however, that Clarke '305 teaches placing respiring biological materials in a plurality of ACM-containing sealed inner containers, where these sealed containers are then exposed to an atmosphere containing ethylene (see paragraph 52-

58 and paragraphs 43-46 and paragraph 194). Clearly, the atmosphere comprising ethylene is outside of the sealed ACM containing containers. Clark ‘305 even teaches that the sealed containers can be placed within a shipping container or trucking container (paragraph 42).

It is noted that the art teaches that the maintenance of a controlled atmosphere facilitates preventing ripening of respiring material until a desired time and for being able to increase the rate of ripening. This ability to control ripening would also have been a function of the particular atmosphere present in the package and the particular rate of exposure of the respiring material to the various gases. This has also been taught by DeMoor on column 5, lines 1-15. Therefore, to modify Marcellin and to first place the respiring material in a plurality of sealed inner packages which have atmosphere control members would thus have been an obvious result effective variable routinely determined through experimentation to one having ordinary skill in the art for the purpose of maintaining a particular controlled atmosphere within the packages and for achieving a particular rate of transmission of the gases that affect the respiring material.

11. Claim 25-28, 39, 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claim 17, 34, 45 and in further view of Clarke (US 6376032), DeMoor (US 6013293) and Nagata (US 4949847).

Regarding claims 25-28, 39, 49 it is noted that Marcellin teaches employing multiple ACM's, since Marcellin teaches employing parallel permeable films, which has shown in figure 10B, result in the formation of multiple chambers. In this case, the

multiple chambers can be seen as a result of the four arrows showing the passage of air there-through. Claims 25 and 27 differ from Marcellin in specifically reciting that the module comprises a first selective ACM consisting of a polymeric coating on a porous substrate where the porous substrate being a microporous film or a nonwoven fabric, which has an R ratio of at least 3 and a second ACM having an R ratio of 1 to 2.3.

It is noted however, that Clarke ‘032 already teaches that it has been conventional to employ multiple ACM’s (see column 8, lines 53-54) and where a selective ACM can have an R ratio of at least 3 (see column 6, line 67 to column 7, line 2). Clarke ‘032 also teaches that the particular coating and permeability properties of the film have been well known to be routinely determinable through experimentation based on the requisite properties desired of the respiring foodstuff (see column 3, lines 13-18). Thus, Clarke ‘032 teaches that it has been conventional in the art to employ multiple ACM’s and that it has been conventional to employ coated microporous films having an R ratio of greater than 3. It is noted that Marcellin already teaches multiple ACM’s and teaches that the particular permeability required in the container has been well recognized to be a function of the particular respiring foodstuff (see at lest, page 229 which discloses the various oxygen and carbon dioxide concentrations of different respiring foodstuffs). Therefore, to modify Marcellin and to employ a selective ACM such as that taught by Clarke ‘032, which is a polymer coated microporous film having an R ratio of at least 3, would thus have been an obvious result effective variable, routinely determined through experimentation for achieving the requisite gas diffusion through the chambered diffusion module of Marcellin.

Regarding a second ACM being non-selective with an R ratio of 1-2.3, and specifically 1 as recited in claims 26 and 28, it is noted that Clarke ‘032 also teaches that the ACM can also employ a low R ratio by employing a coating with R ratios that are less than 1.3 (see column 7, lines 43-49). It is not clear as to whether as a result of the coating having an R ratio of less than 1.3, as taught by Clarke ‘032, that this would have been construed as a non-selective ACM. Nevertheless, De Moor teaches employing more than one atmosphere control member, where one control member can be selective, such as a gas permeable membrane that is similar to the one taught by Clarke ‘032, and another can be non-selective, such as an aperture (see item 123). DeMoor also teaches employing multiple ACM’s (see column 4, lines 36-41), where the ACM employing pinholes aides to ensure equalization of the external pressure and the internal pressure (see column 4, lines 41-46). It is noted that DeMoor also teaches that the ACM which is the selective permeable membrane can have an R ratio of greater than 3, (see at least, column 5, lines 57). DeMoor also teaches employing a combination of selective and non-selective ACMs as recited on column 2, lines 5-19 (where the microporous film can have an R ratio close to 1). On this cited portion, DeMoor teaches employing a combination of a selective ACM and a non-selective ACM in the form of an aperture in the cover member (123) (see column 2, lines 8-19). DeMoor also teaches that the combination of atmosphere control members facilitate in achieving a particular rate of transmission of gases to the respiring material (see column 5, lines 1-15 of De Moor) and that various combinations of ACM’s can be employed (column 4, lines 36-46). In the examples, DeMoor teaches that the aperture can have

a large diameter (see tables 1-3). Applicants' specification indicates that the nonselective ACM can be a single "relatively large perforation" results in an R ratio of 1 see page 7, lines 20-25), and thus there would have been a reasonable expectation that the large perforation of DeMoor would also have had an R ratio of 1. Additionally, Nagata also teaches an arrangement of multiple atmosphere control materials for controlling the atmosphere to which a respiring material has been exposed. For instance, in figures 2 and 3, Nagata teaches a selectively permeable material (5) and a non-selective permeable material (3) which has been employed to provide the requisite degree of gas transfer and thus atmosphere control. Therefore, Clarke '032, DeMoor and Nagata already teach employing a combination of atmosphere control members, and further teach that it has been conventional to employ atmosphere control members that are selective, have an R ratio of at least 3 and are made of a microporous film coated with a polymeric film. Both Clarke '032 and DeMoor also teach employing films having low R ratios, such as less than 1.3 (as taught by Clarke '032) and an R ratio of 1, through the use of a perforated film. Both Clarke '032 and DeMoor teach that the particular permeabilites required would have been a function of the particular gas concentrations required by the respiring foodstuff, as well as the size of the container. Since Marcellin already teaches employing multiple ACM's to thus modify Marcellin and employ a combination of a selective permeable film having an R ratio of at least 3, as taught by Clarke '032 and DeMoor and a second ACM that is non-selective would thus have been an obvious result effective variable, routinely determined through experimentation for the purpose of achieving the requisite permeability for maintaining

the required gas concentration. Further in view of DeMoor, employing a large perforation as an atmosphere control member aides in ensuring that there is an equalization of air pressure across the membrane. Therefore, to also include a perforation as taught by DeMoor for the module of Marcellin would also have been advantageous for the purpose of ensuring that there is an equalization of air pressure between the first atmosphere and the atmosphere inside the module.

12. Claims 40-42, 50-52, 55,57-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claims 17, 22, 30-32, 34, 35, 45 above, and in view of Garrett (US 6007603) and in further view of Clarke (US 6376032) and DeMoor (US 6013293).

Regarding claims 40, 50 and 55, the combination of Marcellin and White has been applied as discussed above. Regarding claim 55, the combination of Marcellin and White already teaches the shipping container, respiring biological material, and a module, as discussed above with respect to claims 17, 34 and 45.

Claims 40, 50 and 55 differ from the combination of Marcellin and White in specifically reciting the inclusion of an auxiliary closed chamber that comprises an auxiliary internal atmosphere control member and an auxiliary inlet and outlet for gas, and where the ACM has an R ratio of 1 to 2.3 and a first surface in direct contact with the inner atmosphere of the container and a second surface not in direct contact with the inner atmosphere.

It is noted however, that Garrett teaches the inclusion of a first atmosphere control module (figure 1, item 7), which receives a stream of gas and separates the gas and diffuses the requisite gases back into the "inner atmosphere" (see column 3, lines 20-31). Garrett further teaches a second closed chamber (figure 1, item 17) that is within the container (1) and which also has an inlet and outlet for gas (see inlet item 13 and outlet, item 19) and which comprises a permeable film (i.e. an ACM) (column 3, lines 36-45) for the purpose of selectively returning gas components back into the inner atmosphere while discharging undesired gas components. The second closed chamber is not part of the exterior surface of the container. It is noted that Garrett, similar to Marcellin, is also concerned with maintaining an inner atmosphere for respiring foodstuff such as fruit, vegetable and flowers (see column 1, lines 5-9) during transportation (see column 1, line 10). Garrett further teaches that the second atmosphere control member for the purpose of controlling the proportion of carbon dioxide returned to the container, depending on the requirement of the perishable foodstuffs (column 3, line 64-67) and for returning a composition of gas to the atmosphere depending on the requirements of the foodstuff (see column 3, line 67 to column 4, line 12). Thus, the atmosphere control members of the second chamber of Garrett have a first surface in direct contact with the atmosphere of the respiring biological material and a second surface that is not in direct contact with the atmosphere of the biological material, (since the second surface is inside the closed chamber) and thus is exposed to the atmosphere passed into the chamber. Therefore, to modify Marcellin, as taught by Garrett, who is also employing a similar permeation technique for controlling the atmosphere within a container and to

also include another auxiliary closed chamber, as taught by Garrett would have been obvious to one having ordinary skill in the art, for the purpose of being able to further control the gas composition returned back into the inner atmosphere which might not have been completely removed via the primary module.

Regarding the R ratio being 1 to 2.3, both Clarke '032 and DeMoor have been relied on as discussed above with respect to claims 25-28, 39, 49 to teach that it has been known to employ atmosphere control members having an R ratio of between 1 and 2.3 (see Clarke '032 column 7, line 1, for instance). Therefore modify the combination of Marcellin, White and Garrett and to employ ACM's in the secondary chamber having known R ratios would have been an obvious result effective variable, routinely determined through experimentation for the purpose of achieving the requisite diffusion of gas back into the inner atmosphere. It is noted, as already discussed above, that the particular R ratios would have been a function of the particular respiring foodstuff and the requisite gas composition necessary for preserving said foodstuff. Of course, as also discussed above, the degree of permeation would also have been a function of the size of the container and would indeed have been routinely determined through experimentation.

Additionally, regarding the limitation of claims 40, 50 and 55 where an auxiliary closed chamber that is within the container is "separate" or "different" from the module it is noted that Garrett has been relied on as discussed above to teach an "auxiliary closed chamber" comprising a first surface in direct contact with a first atmosphere and a second surface not in direct contact with the first atmosphere and in direct contact

with a second atmosphere. It is further noted that to employ secondary modules performing the similar function of further controlling the gas atmosphere within the container would also appear to have been a duplication of a known diffusion structure for the purpose of achieving the requisite gas concentration in the container. This has further been supported by the fact that Clarke ‘032 and DeMoor already teach employing more than one ACM together for achieving the requisite gas composition within the container. It is noted that the limitation “different” as recited in claim 40 and 50, does not exclude the inclusion of another module serving a similar function (and with similar structure) as the primary module which further facilitates achieving the requisite gas composition within the container. The claims nor the specification limit what constitutes one chamber being different from another chamber, and as such, two individual chambers of the same design can be construed as one being different from the other since each would have been a discrete chamber.

Claims 41, 51 and 57 are similarly rejected for the reasons given above with respect to claims 26 and 28.

Regarding claims 42, 52 and 58, Marcellin teaches employing coated microporous films. It is noted that DeMoor and Clarke ‘032 both teach that it has been known in the art to employ microporous films that are non-coated. For instance see DeMoor column 2, lines 15-19 and Clarke ‘032 column 2, lines 46-50. Since DeMoor and Clarke ‘032 already teach that it has been known to employ uncoated microporous films in gas permeability type applications, to thus modify the permeable material of the auxiliary ACM and to employ an uncoated microporous film would thus have been an

obvious result effective variable that one having ordinary skill in the art would have been readily able to experiment with for the purpose of achieving the desired gas permeability.

Regarding claim 59, Marcellin already teaches a primary closed chamber comprising more than one internal atmosphere control member, as already discussed above with respect to claims 25-28,39,49. Regarding the second ACM having a first surface in contact with the inner atmosphere and a second no in direct contact with the inner atmosphere, it is noted that Marcellin already teaches this concept since one side of the ACM contacts the second atmosphere (as shown in figure 10B) and the other side diffuses gases into the inner side. Therefore, this “other side" would have been in direct contact with the inner atmosphere. Claim 59 differs from Marcellin in specifically reciting that the second internal ACM has an R ratio of 1 to 2.3.

It is noted however, that Clarke ‘032 and DeMoor have been relied on as discussed above with respect to claims 25-28,39,39 to teach that it has been known and conventional in the art to experiment with combinations of ACMs where an ACM can have an R ratio of between 1 and 2.3, for the purpose of achieving the requisite permeability. Therefore, to modify the module taught by Marcellin and to employ an R ratio for the second ACM in the module of between 1 and 2.3 would have been an obvious result effective variable, routinely determined through experimentation.

Regarding claim 60, the combination of Marcellin and White already teaches employing flexible conduits, as discussed above with respect to claim 22.

13. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination, as applied to claim 40, and in further view of Clarke (US 20020127305).

Regarding claim 43, Marcellin teaches placing respiring materials in the containers and White teaches packaged products (see figure 1a, item 10 and 20) within an outer container (figure 1a, items 16 and 12). It is noted that boxes can be construed as atmosphere control members since they would have restricted the particular exposure of the respiring food within the box to the particular inlet of gas. Nevertheless, claim 24 differs in reciting that the respiring biological material is paced in a plurality of ACM containing sealed inner containers.

It is noted however, that Clarke '305 teaches placing respiring biological materials in a plurality of ACM-containing sealed inner containers, where these sealed containers are then exposed to an atmosphere containing ethylene (see paragraph 33-34 and paragraphs 43-46 and paragraph 194). Clearly, the atmosphere comprising ethylene is outside of the sealed ACM containing containers. Clark '305 even teaches that the sealed containers can be placed within a shipping container or trucking container (paragraph 42).

It is noted that the art teaches that the maintenance of a controlled atmosphere facilitates preventing ripening of respiring material until a desired time and for being able to increase the rate of ripening. This ability to control ripening would also have been a function of the particular atmosphere present in the package and the particular rate of exposure of the respiring material to the various gases. This has also been taught by

DeMoor on column 5, lines 1-15). Therefore, to modify Marcellin and to first place the respiring material in a plurality of sealed inner packages which have atmosphere control members would thus have been an obvious result effective variable routinely determined through experimentation to one having ordinary skill in the art for the purpose of maintaining a particular controlled atmosphere within the packages and for achieving a particular rate of transmission of the gases that affect the respiring material.

14. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claim 55 above, and in further view of Liston (US 5801317).

Regarding claim 56, the combination applied to claim 55 already teaches a primary pressure generating means for supplying the second atmosphere to the second surface of the primary ACM, as taught by Marcellin and already discussed above with respect to claim 18. The combination applied to claim 55 teaches a secondary ACM and a secondary pressure generating means for supplying the auxiliary second atmosphere such as the valve 15 and compressor 3 taught by Garrett.

Claim 56 differs in specifically reciting that the system comprises one or more sensors which measure the concentration of the inner atmosphere and the metering rate of the second atmosphere being supplied in response to input from the one or more sensors. It is noted however, that Liston teaches employing sensors (figure 2, item 58 and 54) for sensing the concentration within the container, and subsequently using this measurement to control the input of outside air into a gas separation device (24) which

subsequently injects the requisite gas into the container via conduit (38) for thus controlling the gas concentration inside the container (see column 12, lines 6 to column 13, line 48). Liston is thus similar to Marcellin since Liston also controls the atmosphere within a container used to maintain the freshness of respiring foodstuffs. In view of Liston, there is clearly an advantage to employing sensors that monitor the gas concentration within the container, so that the atmosphere within the container is maintained at the requisite concentration. This would further have been desirable since respiring foodstuffs clearly would have consumed particular gases present within the container, for the purpose of retaining freshness. Therefore, to modify the combination and to also employ sensors that monitor the atmosphere within the container and to employ pressure generating and metering devices (i.e. such as blowers and valves) which actuate based on the data measured by the sensors would thus have been obvious to one having ordinary skill in the art, for the purpose of being able to closely monitor the concentration of the gases within the container.

Double Patenting

15. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

16. Claims 17, 18, 22, 32 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 21, 27,34, 36,38,39 of copending Application No. 11989513 and in further view of Marcellin and White (US 6256905).

Regarding claim 17, copending claim 36 teaches a shipping container that can be loaded onto a truck that has a capacity of 40 cubic meters and contains a respiring biological material sealed within the shipping container and is surrounded by an atmosphere and further compr8ising an assembly which includes a primary ACM that has a surface area of greater than 0.65 square meters and conduits for circulating an atmosphere through the assembly and back into the shipping container. It is noted that "the assembly" as recited in the copending claim has been construed as equivalent to the module of claim 17 of this application. It is noted that copending claim 36 also teaches that the ACM in the assembly has a first and second surface, with a first surface in contact with a the packaging atmosphere (i.e. inner atmosphere) and a second surface in contact with the a second atmosphere.

Claim 17 differs from copending claim 36 in specifically reciting that the first surface of the ACM is in direct contact with the inner atmosphere and the second surface is not in direct contact with the inner atmosphere. Also, claim 17 differs from the copending claim 36 in specifically reciting that the module is within the whipping container and is not a part of the exterior surface of the container.

It is noted however, that copending claim 21 teaches that the primary surface of the assembly is in direct contact with the atmosphere in the shipping container (see step “A”) and where the second primary surface of the primary ACM is in contact with a second atmosphere - a primary exterior atmosphere (see step "B"). Claim 21 is still not clear as to whether the second primary surface is not in direct contact with the inner atmosphere, and the copending claims are silent in reciting that the assembly (i.e. module) is within the container.

It is noted however, that Marcellin teaches a similar ACM module that is within a container that is used to hold respiring biological materials (see figure 10B) which thus comprises an ACM that has a first surface in direct contact with the inner atmosphere of the shipping container and a second surface that is not in direct contact with the inner atmosphere of the shipping container but rather, contacts the second atmosphere (see the vertical arrows in the exchanger diffuser of figure 10B). Marcellin also teaches the module being within the container and also being able to provide a supply of a second atmosphere. Although Marcellin does not appear to teach a separately assembled and removable module, White clearly teaches that it has been advantageous to make such assemblies removable and interchangeable so that they can be conveniently attached

to conventional refrigeration shipping containers. Also, making the module removable would have been advantageous for being able to interchange the module, due to repairs or use with other containers. Also, such a modification would have been advantageous for the purpose of being able to interchange different modules that would allow for different degrees of gas permeation into the container, based on the particular type of respiring foodstuff to be stored and the requisite modified atmosphere to maintain the freshness of the particular foodstuff. In any case, it is noted that White also teaches that the gas regulating device is removable, since it is loaded onto the container (see column 9, lines 42-57). Clearly, making such a gas regulating device removable would have provided the advantage that it could be employed for shipping containers of various types, such as refrigerated containers, seagoing cargo containers, railroad freight cars, to name a few (see column 9, lines 32-34). Keeping it on the interior of the container would further have been advantageous for the purpose of protecting the atmosphere control members from damage during transportation, especially in view of the fact that Marcellin and White both teach placing atmosphere regulating devices within the confines of a container. Therefore, to modify the copending claims and to place the assembly within the container would have been obvious to one having ordinary skill in the art, for the purpose of protecting the atmosphere control assembly from damage during transportation.

Regarding claim 18, copending claim 38 teaches employing sensors to measure the concentration of gas within the packaging atmosphere and using the data from the

sensors to regulate the flow of the secondary (primary exterior atmosphere) to the second primary surface of the primary ACM.

Regarding claim 22, the copending claims are silent in reciting the use of flexible conduits. It is noted however, that White clearly teaches employing hosing as the connecting conduits (see column 14, lines 19-21 and figures 7a, 7b and column 16, lines 25-33). Regarding the use of hosing, it is noted that clearly hosing provides for added maneuverability of the conduits since they would flex since flexible conduits have been known to be easier to bend and manipulate than non-flexible conduits. In view of White who also teaches that the gas regulating device is removable from the container, to thus modify the combination which teaches the advantage of situating the assembly within the container, and to employ flexible inlet and outlet conduits would further have been advantageous for the purpose of providing the added maneuverability to the conduits for making it easier to route the conduits to the module and do and from the container.

Regarding claim 32, which recites that the chamber comprises atmosphere control members on a major face and an inlet and outlet for incoming and outgoing gases on a first and second minor opposite faces, respectively, it is noted that Marcellin teaches that the atmosphere control members are on a major face, as shown in figure 10B in cross-section. The “top” and “bottom” as shown in figure 10B can be considered minor faces on which are inlet and outlets for incoming and outgoing gases, respectively. Marcellin teaches vertical, parallel alignment but does not specifically state that the shape of the chamber is rectangular parallelepiped or cylindrical,

respectively. From figure 10B, by way of the cross-section it would appear that the module would indeed employ a rectangular shape. It is noted however, that since Marcellin already teaches a chamber with opposite facing inlet and outlets for gases and another face with atmosphere control members, the particular shape of the chamber is not seen to have provided a patentable distinction over the reference.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

17. Claim 24 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 21, 27,34, 36,38,39 of copending Application No. 11989513, as applied to claim 17 above, and in further view of Clarke (US 20020127305) and De Moor (US 6013293).

Regarding claim 24, the copending claims teach that the respiring biological material can be contained in a packaging atmosphere but the copending claims are silent as to the respiring biological material packed in a plurality of ACM-containing sealed inner containers.

It is noted however, Clarke '305 teaches placing respiring biological materials in a plurality of ACM-containing sealed inner containers, where these sealed containers are then exposed to an atmosphere containing ethylene (see paragraph 52-58 and paragraphs 43-46 and paragraph 194). Clearly, the atmosphere comprising ethylene is

outside of the sealed ACM containing containers. Clark ‘305 even teaches that the sealed containers can be placed within a shipping container or trucking container (paragraph 42).

It is noted that the art teaches that the maintenance of a controlled atmosphere facilitates preventing ripening of respiring material until a desired time and for being able to increase the rate of ripening. This ability to control ripening would also have been a function of the particular atmosphere present in the package and the particular rate of exposure of the respiring material to the various gases. This has also been taught by DeMoor on column 5, lines 1-15. Therefore, to modify the copending claims and to first place the respiring material in a plurality of sealed inner packages which have atmosphere control members would thus have been an obvious result effective variable routinely determined through experimentation to one having ordinary skill in the art for the purpose of maintaining a particular controlled atmosphere within the packages and for achieving a particular rate of transmission of the gases that affect the respiring material.

This is a provisional obviousness-type double patenting rejection.

18. Claims 23, 33, are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 21, 27,34, 36,38,39 of copending Application No. 11989513, as applied to claim 17 above, and in further view of Clarke (US 6376032).

Regarding claim 23, the copending claims teaches employing an atmosphere control member but does not specifically recite that the atmosphere control member comprises a microporous film having a coating of a side chain crystalline polymer therein and has an oxygen P_{10} ratio over at least one 10° range between -5 and 15°C of at least 1.3.

It is noted however, that Clarke et al. '032 teaches a microporous film having a coating of a side chain crystalline polymer therein, and has an oxygen P_{10} ratio over at least one 10° range between -5 and 15°C of at least 1.3 (see the abstract - "Preferred coating polymers are side chain crystalline polymers."; column 1, lines 62-64 and column 3, lines 7-12). Clarke teaches that employing such permeable films for controlling the atmosphere within a container, and where the permeable film provides the only pathways for oxygen and carbon dioxide to enter and leave the container (see column 4, lines 8-19). Clarke et al. '032 further teaches that the container can comprise multiple permeable control sections for oxygen and carbon dioxide (column 4, lines 14-19). Marcellin also teaches employing multiple coated films (see page 230 - "silicone elastmoer coated fabric" "arranged vertically and in parallel") for achieving the requisite diffusion of oxygen and carbon dioxide into the "first atmosphere" of the container. It is further noted that the particular permeability across multiple atmosphere control members would also have been a function of the size of the container and the quantity and type of respiring material to be stored in the container. Therefore, since Clarke '032 already teaches that employing a coated film as recited in claim 23 as atmosphere control members it would have been an obvious result effective variable,

routinely determined to experimentation to modify the copending claims and employ a polymeric coated film, as taught by Clarke ‘032, for the purpose of achieving the requisite gas concentration within the container.

Regarding claim 33, Clarke ‘032 teaches employing a single polymeric coating on the microporous film (column 6, line 45). Therefore, it would have been obvious to one having ordinary skill in the art to employ a single coating if it has been adequate to achieve the requisite permeability.

19. Claim 25-28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 21, 27,34, 36,38,39 of copending Application No. 11989513, as applied to claim 17 above and in further view of Clarke (US 6376032), DeMoor (US 6013293) and Nagata (US 4949847).

Regarding claims 25-28, it is noted that the copending claim 36 teaches employing primary and secondary ACM's but claims 25 and 27 differ from the copending claims in specifically reciting that the module comprises a first selective ACM consisting of a polymeric coating on a porous substrate where the porous substrate being a microporous film or a nonwoven fabric, which has an R ratio of at least 3 and a second ACM having an R ratio of 1 to 2.3.

It is noted however, that Marcellin teaches employing parallel permeable films, which has shown in figure 10B, result in the formation of multiple chambers. In this case, the multiple chambers can be seen as a result of the four arrows showing the

passage of air there-through. Thus Marcellin teaches multiple ACM's in a module system that is similar to that of claim 36 of the copending claims.

Additionally, Clarke '032 already teaches that it has been conventional to employ multiple ACM's (see column 8, lines 53-54) and where a selective ACM can have an R ratio of at least 3 (see column 6, line 67 to column 7, line 2). Clarke '032 also teaches that the particular coating and permeability properties of the film have been well known to be routinely determinable through experimentation based on the requisite properties desired of the respiring foodstuff (see column 3, lines 13-18). Thus, Clarke '032 teaches that it has been conventional in the art to employ multiple ACM's and that it has been conventional to employ coated microporous films having an R ratio of greater than 3. It is noted that Marcellin already teaches multiple ACM's and teaches that the particular permeability required in the container has been well recognized to be a function of the particular respiring foodstuff (see at lest, page 229 which discloses the various oxygen and carbon dioxide concentrations of different respiring foodstuffs).

Therefore, to modify the copending claims which already recites employing multiple ACM's and to employ a selective ACM such as that taught by Clarke '032, which is a polymer coated microporous film having an R ratio of at least 3, would thus have been an obvious result effective variable, routinely determined through experimentation for achieving the requisite gas diffusion through the chambered diffusion module of copending claim 36.

Regarding the second ACM being non-selective with an R ratio of 1-2.3, and specifically 1 as recited in claims 26 and 28, it is noted that Clarke '032 also teaches

that the ACM can also employ a low R ratio by employing a coating with R ratios that are less than 1.3 (see column 7, lines 43-49). It is not clear as to whether as a result of the coating having an R ratio of less than 1.3 that this would have been construed as a non-selective ACM. Nevertheless, De Moor teaches employing more than one atmosphere control member, where one control member can be selective, such as a gas permeable membrane that is similar to the one taught by Clarke '032, and another can be non-selective, such as an aperture (see item 123). DeMoor also teaches employing multiple ACM's (see column 4, lines 36-41), where the ACM employing pinholes aides to ensure equalization of the external pressure and the internal pressure (see column 4, lines 41-46). It is noted that DeMoor also teaches that the ACM which is the selective permeable membrane can have an R ratio of greater than 3, (see at least, column 5, lines 57). DeMoor also teaches employing a combination of selective and non-selective ACMs as recited on column 2, lines 5-19 (where the microporous film can have an R ratio close to 1). On this cited portion, DeMoor teaches employing a combination of a selective ACM and a non-selective ACM in the form of an aperture in the cover member (123) (see column 2, lines 8-19). DeMoor also teaches that the combination of atmosphere control members facilitate in achieving a particular rate of transmission of gases to the respiring material (see column 5, lines 1-15 of De Moor) and that various combinations of ACM's can be employed (column 4, lines 36-46). In the examples, DeMoor teaches that the aperture can have a large diameter (see tables 1-3). Applicants' specification indicates that the nonselective ACM can be a single "relatively large perforation" results in an R ratio of 1 see page 7, lines 20-25), and thus

there would have been a reasonable expectation that the large perforation of DeMoor would also have had an R ratio of 1. Additionally, Nagata also teaches similar arrangement as that shown in applicant's figures for controlling the atmosphere to which a respiring material has been exposed. For instance, in figures 2 and 3, Nagata teaches a selectively permeable material (5) and a non-selective permeable material (3) which has been employed to provide the requisite degree of gas transfer and thus atmosphere control. Therefore, both Clarke '032, DeMoor and Nagata already teach employing a combination of atmosphere control members, and further teach that it has been conventional to employ atmosphere control members that are selective, have an R ratio of at least 3 and are made of a microporous film coated with a polymeric film. Both Clarke '032 and DeMoor also teach employing films having low R ratios, such as less than 1.3 (as taught by Clarke '032) and an R ratio of 1, through the use of a perforated film. Both Clarke '032 and DeMoor teach that the particular permeabilites required would have been a function of the particular gas concentrations required by the respiring foodstuff, as well as the size of the container. Since the copending claim 36 already teaches employing multiple ACM's to thus modify the copending claim 36 and employ a combination of a selective permeable film having an R ratio of at least 3, as taught by Clarke '032 and DeMoor and a second ACM that is non-selective would thus have been an obvious result effective variable, routinely determined through experimentation for the purpose of achieving the requisite permeability for maintaining the required gas concentration. Further in view of DeMoor, employing a large perforation as an atmosphere control member aides in ensuring that there is an

equalization of air pressure across the membrane. Therefore, to also include a perforation as taught by DeMoor for the for the assembly of the copending claim 36, would also have been advantageous for the purpose of ensuring that there is an equalization of air pressure between the first atmosphere and the atmosphere inside the module.

20. Claims 55,57-60 a are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 21, 27,34, 36,38,39 of copending Application No. 11989513, as applied to claim 17 above and in further view of Garrett (US 6007603) and in further view of Clarke (US 6376032) and DeMoor (US 6013293).

Regarding claim 55, the combination of copending claim 36 and Marcellin and White has been applied as discussed above. Regarding claim 55, the combination of already teaches the shipping container, respiring biological material, and a module, as discussed above with respect to claims 17. Claim 55 differs from the combination in specifically reciting the inclusion of an auxiliary closed chamber that comprises an auxiliary internal atmosphere control member and an auxiliary inlet and outlet for gas, and where the ACM has an R ratio of 1 to 2.3 and a first surface in direct contact with the inner atmosphere of the container and a second surface not in direct contact with the inner atmosphere.

It is noted however, that Garrett teaches the inclusion of a first atmosphere control module (figure 1, item 7), which receives a stream of gas and separates the gas

and diffuses the requisite gases back into the "inner atmosphere" (see column 3, lines 20-31). Garrett further teaches a second closed chamber (figure 1, item 17) that is within the container (1) and which also has an inlet and outlet for gas (see inlet item 13 and outlet, item 19) and which comprises a permeable film (i.e. an ACM) (column 3, lines 36-45) for the purpose of selectively returning gas components back into the inner atmosphere while discharging undesired gas components. It is noted that Garrett, is similar to the copending claim 36 and the combination since Garrett is also concerned with maintaining an inner atmosphere for respiring foodstuff such as fruit, vegetable and flowers (see column 1, lines 5-9) during transportation (see column 1, line 10). Garrett further teaches that the second atmosphere control member for the purpose of controlling the proportion of carbon dioxide returned to the container, depending on the requirement of the perishable foodstuffs (column 3, line 64-67) and for returing a composition of gas to the atmosphere depending on the requirements of the foodstuff (see column 3, line 67 to column 4, line 12). Therefore, to modify the combination, which also employs a similar permeation technique for controlling the atmosphere within a container and to also include another auxiliary closed chamber, as taught by Garrett would have been obvious to one having ordinary skill in the art, for the purpose of being able to further control the gas composition returned back into the inner atmosphere which might not have been completely removed via the primary module. Regarding the R ratio beign 1 to 2.3, both Clarke ‘032 and DeMoor have been relied on as discussed above with respect to claims 25-28, 39, 49 to teach that it has been known to employ atmosphere control members having an R ratio of between 1 and 2.3 (see Clarke ‘032

column 7, line 1, for instance). Therefore modify the combination of the copending claim 36 and Marcellin, White and Garrett and to employ ACM's in the secondary chamber having known R ratios would have been an obvious result effective variable, routinely determined through experimentation for the purpose of achieving the requisite diffusion of gas back into the inner atmosphere. It is noted, as already discussed above, that the particular R ratios would have been a function of the particular respiring foodstuff and the requisite gas composition necessary for preserving said foodstuff. Of course, as also discussed above, the degree of permeation would also have been a function of the size of the container and would indeed have been routinely determined through experimentation.

Claim 55 differs from the combination of Marcellin and White in specifically reciting an auxiliary closed chamber that is within the container, separate (or "different") from the module and comprises an auxiliary internal atmosphere control member, an auxiliary inlet for gas and an auxiliary outlet for gas with the ACM having an R ratio of 1 to 2.3 and comprising a first surface in direct contact with the inner atmosphere and a second surface not in direct contact with the inner atmosphere. It is further noted that to employ secondary modules performing the similar function of further controlling the gas atmosphere within the container would also appear to have been a duplication of a known diffusion structure for the purpose of achieving the requisite gas concentration in the container. This has further been supported by the fact that Clarke '032 and DeMoor already teach employing more than one ACM together for achieving the requisite gas composition within the container. It is noted that the limitation "different" as recited in

claim 40 and 50,does not exclude the inclusion of another module serving a similar function as the primary module which further facilitates achieving the requisite gas composition within the container.

Claim 57 is similarly rejected for the reasons given above with respect to claims 26 and 28.

Regarding claim 58, Marcellin teaches employing coated microporous films. It is noted that DeMoor and Clarke '032 both teach that it has been known in the art to employ microporous films that are non-coated. For instance see DeMoor column 2, lines 15-19 and Clarke '032 column 2, lines 46-50. Since DeMoor and Clarke '032 already teach that it has been known to employ uncoated microporous films in gas permeability type applications, to thus modify the permeable material of the auxiliary ACM and to employ an uncoated microporous film would thus have been an obvious result effective variable that one having ordinary skill in the art would have been readily able to experiment with for the purpose of achieving the desired gas permeability.

Regarding claim 59, Marcellin already teaches a primary closed chamber comprising more than one internal atmosphere control member, as already discussed above with respect to claims 25-28,39,49. Regarding the second ACM having a first surface in contact with the inner atmosphere and a second no in direct contact with the inner atmosphere, it is noted that Marcellin already teaches this concept since one side of the ACM contacts the second atmosphere (as shown in figure 10B) and the other side diffuses gases into the inner side. Therefore, this "other side" would have been in

direct contact with the inner atmosphere. Claim 59 differs from the combination in specifically reciting that the second internal ACM has an R ratio of 1 to 2.3.

It is noted however, that Clarke ‘032 and DeMoor have been relied on as discussed above with respect to claims 25-28,39,39 to teach that it has been known and conventional in the art to experiment with combinations of ACMs where an ACM can have an R ratio of between 1 and 2.3, for the purpose of achieving the requisite permeability. Therefore, to modify the module taught by Marcellin and to employ an R ratio for the second ACM in the module of between 1 and 2.3 would have been an obvious result effective variable, routinely determined through experimentation.

Regarding claim 60, the combination already teaches employing flexible conduits, as discussed above with respect to claim 22.

Response to Arguments

21. On page 20 of the response, applicants assert that Marcellin does not disclose or suggest a shipping container. It is noted that to make a container such as that shown in figure 10B of Marcellin portable would not have provided a patentable distinction over the prior art, especially in view of White who also teaches a similar concept to that of Marcellin and where the portability of the container holding the respiring foodstuffs provides the advantage of maintaining the freshness of the foodstuff even during transport.

22. Further on page 20 of the response, applicants urge that the module must be constructed separately from the shipping container and since Marcellin discloses the diffusion battery joined to the “cold room” that Marcellin does not disclose a module.

It is noted however, that the diffusion “module” shown in figure 10B would appear to still have been made separate from the remainder of the room, especially since it comprises conduits and a series of chambers comprising atmosphere control members. Nevertheless, to make such a module separable would not have provided a patentable distinction over the prior art because to make a product separable could be considered desirable for the purpose of being able to more easily service the module if repairs were desired, for instance (see MPEP 2144.04). Also, making the module removable would have been advantageous for being able to interchange the module, due to repairs or use with other containers. Also, such a modification would have been advantageous for the purpose of being able to interchange different modules that would allow for different degrees of gas permeation into the container, based on the particular type of respiring foodstuff to be stored and the requisite modified atmosphere to maintain the freshness of the particular foodstuff. In any case, it is noted that White also teaches that the gas regulating device is removable, since it is loaded onto the container (see column 9, lines 42-57). Clearly, making such a gas regulating device removable would have provided the advantage that it could be employed for shipping containers of various types, such as refrigerated containers, seagoing cargo containers, railroad freight cars, to name a few (see column 9, lines 32-34).

23. Applicants' arguments regarding Marcellin failing to disclose the loading and unloading procedures defined in claims 34 and 45 have been considered but are moot in view of the new grounds of rejection necessitated by the amendment to the claims.

24. Applicants arguments on page 22 regarding Marcellin's failure to disclose flexible conduits as recited in claims 22, 35, 46 and 60 have been considered but are moot in view of the new grounds of rejection necessitated by this amendment.

25. On page 22 of the response, regarding the use of sensors and pressure generating means assert that Liston is concerned with a completely different technology and that the hollow fiber membranes are not exposed to the gas surrounding the product in the storage facility.

It is noted however, that Liston has only been relied on to teach that it has been known and advantageous to employ sensors within a container comprising respiring foodstuffs that require a particular modified atmosphere, which then transmit the gas composition within the container to a controller that regulates a pressure generating means which subsequently generates the requisite gas composition to be input back into the container for the purpose of maintaining the requisite gas composition. Since Marcellin also teaches maintaining a particular gas composition would have been advantageous and within the skill of one having ordinary skill in the art to employ sensors and pressure generating means, such as compressors and blowers and added gas sources for the purpose of automatically being able to control and regulate the atmosphere within the container.

26. Applicants arguments on pages 22-23 of the response regarding the particular R ratios of the first and second ACM and the particular combinations of ACMs have been considered but are moot in view of the new grounds of rejection necessitated by the amendment to the claims.

27. Applicants arguments on page 23 of the response regarding the P10 ratio have been considered but are moot in view of the new grounds of rejection necessitated by the amendment to the claims.

28. On page 23 of the response, applicants assert that Clark does not disclose or suggest that the shipping or trucking container should contain an additional ACM of any kind or an ACM that is part of a module through which a second atmosphere is passed.

It is noted howver, that Marcellin already teaches a module comprising multiple ACMs and a second atmosphere that passes through the ACM and diffuses into the inner atmosphere of the container. Clarke '305 teaches that ethylene gas can be passed over a sealed container comprising ACMs, thus allowing permeation of the gas into the sealed container. This thus teaches a sealed container comprising ACMs that can be exposed to exterior gases which can permeate into the sealed containers by way of the ACMs. It is noted that DeMoor has only been relied on to teach that it has been know that combinations of ACMs can control the particular gas concentration to which the food product would have been exposed to. It is noted that Clarke '305 already teaches employing individual containers that can comprise multiple ACMs and Clarke '305 further teaches that a gas flow over the exterior of these containers. Thus it would have been an obvious result effective variable, routinely determined through

experimentation to place sealed containers comprising ACM's within the larger container of Marcellin, for the purpose of further controlling the particular atmosphere to which the respiring foodstuff would have been exposed to.

Conclusion

29. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VIREN THAKUR whose telephone number is (571)272-6694. The examiner can normally be reached on Monday through Friday from 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571)-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VIREN THAKUR/
Primary Examiner, Art Unit 1782